

Waste Management Competency 4.2

Competency 4.2 Waste management personnel shall demonstrate a working level knowledge of Department financial management practices, as they relate to the oversight and management of waste management activities as described in Department of Energy (DOE) Notice 4700.5, Project Control System Guidelines.

1. Supporting Knowledge and/or Skills

- a. Given appropriate data, review contractor cost estimates and budgets and report on their accuracy.
- b. Given program data, identify the direct and indirect costs.
- c. Given project management data, identify the Earned Value and discuss its significance to project budget and schedule.
- d. Given project management data, identify the Budgeted Cost of Work Performed, the Budgeted Cost of Work Schedule, the Actual Cost of Work Performed, the schedule variance and calculate or verify the calculation of the cost variance.
- e. Given project management data, determine the Estimate at Completion.
- f. Given project data, prepare and submit the appropriate change control forms to document changes in the program funding.
- g. Using hypothetical program data, prepare a plan and supporting schedule to support the production of identified deliverables.

2. Self-Study Activities (Corresponding to the Intent of the Above Competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	http://wastenot.inel.gov/cted/stdguido.html	DOE Standards, Guides, and Orders
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

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Review DOE 5700.2D, *Cost Estimating, Analysis, and Standardization*.

Review DOE N 4700.5, *Project Control System Guidelines*.

Review DOE O 130.2, *Budget Formulation*.

EXERCISE 4.2-A Given appropriate data, review contractor cost estimates and budgets and report on their accuracy.

Review DOE Order 4700.1, *Project Management System*. This Order will be phased out upon the incorporation of its contents into contracts or other agreements. It is presented here because its general content remains applicable.

Scan DOE O 430.1, *Life-Cycle Asset Management*, Section 6, Requirements.

EXERCISE 4.2-B Prepare a plan, budget, and schedule encompassing all the DOE standard activities for the following hypothetical project.

- In so doing, complete the second column of the attached checklist with your supervisor to determine what tasks you will need to describe and document.
- As you complete the tasks, fill out the column, "Complete (Y/N) & Comments."
- Present your entire project package to your supervisor or site subject-matter expert for evaluation.

Project: As the assigned project manager for a subactivity of the following strategic system (i.e., **Build or Convert Facilities and Equipment to Reprocess Specific High-Level Radioactive Waste for Biomedical Application**); design, procure, install, check out, operate, and maintain an uninterruptible power supply (UPS).

UPS PROJECT - COMPLETION CHECKLIST (Example)			
DOE Standard Project Activities	UPS Project Tasks	Complete (Y/N) & Comments	Supervisor OK
Plan			
System design			
Work scope			
WBS			
Resources			

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UPS PROJECT - COMPLETION CHECKLIST (Example)			
DOE Standard Project Activities	UPS Project Tasks	Complete (Y/N) & Comments	Supervisor OK
Budget			
Schedule			
Acquisition-Procurement			
Approval			
Bid spec.			
Bid			
Review bids			
Accept			
Purchase			
Receipt			
Installation, checkout, & acceptance testing			
Preparation-revision of ops. and maint. procedures, and drawings			
Preparation of trng. materials			
Staff training			
Execution			
Operation, maintenance, & surveillance			
Update of design docs.			

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UPS PROJECT - COMPLETION CHECKLIST (Example)			
DOE Standard Project Activities	UPS Project Tasks	Complete (Y/N) & Comments	Supervisor OK
Control			
Configuration management			
QA			
Project mgt.			
Reporting			

EXERCISE 4.2-C Given project management data, identify the Earned Value and discuss its significance to project budget and schedule.

Read DOE N 4700.5, *Project Control System Guidelines*, Attachment 2, Project Control System Guidelines; and DOE Order 4700.1, *Project Management System*, pages III-25 through III-39, Project Control; and pages III-85 through III-89, Attachment III-7, Cost and Schedule Control Systems Criteria. Note that this Order will be phased out upon the incorporation of its contents into contracts or other agreements. It is presented here because its general content remains applicable.

Scan DOE O 430.1, *Life-Cycle Asset Management*, Section 6, Requirements.

EXERCISE 4.2-D Given project management data, identify the budgeted cost of work performed, the budgeted cost of work schedule, the actual cost of work performed, the schedule variance and calculate or verify the calculation of the cost variance.

Read DOE N 4700.5, *Project Control System Guidelines*, Attachment 2, Project Control System Guidelines.

Read DOE Order 4700.1, *Project Management System*, pages III-25 through III-39, Project Control; and pages III-85 through III-89, Attachment III-7, Cost and Schedule Control Systems Criteria.

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Scan DOE O 430.1, *Life-Cycle Asset Management*, Section 6, Requirements.

EXERCISE 4.2-E How is the estimate at completion (EAC) computed?

EXERCISE 4.2-F How is EAC used in contractor performance analysis?

Locate and **review** the directions for the project-control forms used at your site or facility.

EXERCISE 4.2-G Given project data, prepare and submit to your supervisor the appropriate change control forms to document changes in the program funding.

Review DOE Order 4700.1, *Project Management System*, Attachment III, Definitions.

EXERCISE 4.2-H Given program data, identify the direct and indirect costs.

3. Summary

DOE Order 5700.2D, *Cost Estimating, Analysis, and Standardization*, defines cost estimate as:

“ . . . a statement of costs estimated to be incurred in the conduct of an activity such as a program, or the acquisition of a project or system.” Budget is usually defined as a financial plan used to estimate the results of future operations.

Projects are broken into categories by the total cost of the projects. Major System Acquisitions (MSAs) are above \$100 million, Major Projects (MPs) are \$50-100 million, and “other” projects are under \$50 million. Funding for projects are generally the responsibility of the Program Secretarial Office.

The contractor decides the nature of the cost, either direct or indirect, and the decision is reviewed by the Contracting Officer and Chief Financial Officer for the contract, using government-prescribed guidelines. There is no absolute list of costs that belong in one group or another.

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Performance measurement data analysis is a dual responsibility of the contractor and DOE. The contractor performs this function for internal management needs and for preparation of the external reports to DOE. Cost, schedule, and at-completion variances that exceed established thresholds require review and analysis to determine the cause, to evaluate options to resolve the situation, and to report actions to higher management. These variances are calculated using the project management tools: earned value (EV), budgeted cost of work scheduled (BCWS), budgeted cost of work performed (BCWP), actual cost of work performed (ACWP), and estimate at completion (EAC). The use of these reports and control tools assist DOE and the contractor in:

- Determining the current contract cost and schedule performance status
- Highlighting areas requiring more detailed focus and attention
- Identifying deviations and trends
- Forecasting, verifying, or questioning future work status

Project management is a management approach in which authority and responsibility for execution are vested in a single individual. This approach provides focus on the planning, organization, direction, and control of all activities within the project. The project management plan is the document that sets forth the plans, organization, and systems that those responsible for managing the project shall utilize.

A cornerstone of DOE's project management policy is the concept of accountability at appropriate levels for project control and management. An essential element of accountability is overall project control of technical scope, cost, and schedule baselines. The three major categories in the Project Control System are Baseline Development, Project Performance, and Change Management.

4. Exercise Solutions

EXERCISE 4.2-A Given appropriate data, review contractor cost estimates and budgets and report on their accuracy.

ANSWER 4.2-A See your supervisor for an assignment.

EXERCISE 4.2-B Prepare a plan, budget, and schedule encompassing all the DOE standard activities for the following hypothetical project.

- In so doing, complete the second column of the attached checklist with your supervisor to determine what tasks you will need to describe and document.
- As you complete the tasks, fill out the column, "Complete (Y/N) & Comments."
- Present your entire project package to your supervisor or site subject-matter expert for evaluation.

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Project: As the assigned project manager for a subactivity of the following strategic system (i.e., **Build or Convert Facilities and Equipment to Reprocess Specific High-Level Radioactive Waste for Biomedical Application**); design, procure, install, check out, operate, and maintain an uninterruptible power supply (UPS).

ANSWER 4.2-B Solutions are dependent upon the initial data used. Review your completed checklist with your supervisor or site subject-matter expert.

EXERCISE 4.2-C Given project management data, identify the Earned Value and discuss its significance to project budget and schedule.

ANSWER 4.2-C

1. For the assumed time period, identify the amount or milestone for the work actually performed.
2. Determine the apportioned budget for this work performed. This is the earned value.
3. Compare this value with the actual cost of the performed during this period of time. This difference is the cost variance.
4. Depending on whether the cost variance is positive or negative, the DOE cognizant individual will require the contractor project manager to take specific actions to rectify any overrun or to reconcile the underrun. In either case, the DOE cognizant individual will likely increase oversight activities of the contractor.

EXERCISE 4.2-D Given project management data, identify the budgeted cost of work performed, the budgeted cost of work schedule, the actual cost of work performed, the schedule variance and calculate or verify the calculation of the cost variance.

ANSWER 4.2-D

1. For the assumed time period, identify the work that has been planned and identify the amount or milestone for the work actually performed.
2. Determine the apportioned budget for this work performed. This is the earned value.
3. Compare the work that has been planned with the amount of work actually performed. This difference is the schedule variance.
4. Compare the earned value of the work performed with the actual cost of the work performed during this period of time. This difference is the cost variance.

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5. Depending on whether these variances are positive or negative, the DOE cognizant individual will require the contractor project manager to take specific actions to rectify any cost overrun or schedule slippage, and to reconcile cost underrun or a schedule forecast. In either case, the DOE cognizant individual will likely increase oversight activities of the contractor.

EXERCISE 4.2-E How is the estimate at completion (EAC) computed?

ANSWER 4.2-E Determine the actual project costs to date and add the estimated costs of all remaining work. These estimated costs will be the same or similar in magnitude to the apportioned budget for the remaining work.

EXERCISE 4.2-F How is EAC used in contractor performance analysis?

ANSWER 4.2-F Based on the contractor's performance to date and estimates of future conditions, an EAC is computed and compared to the total budgeted cost for work scheduled or the projected budget at completion. At the contract level, total budget is usually equal to the contract value; therefore, the difference between the budget at completion and the EAC forecasts a contract overrun or underrun.

EXERCISE 4.2-G Given project data, prepare and submit to your supervisor the appropriate change control forms to document changes in the program funding.

ANSWER 4.2-G Discuss your results with your supervisor.

EXERCISE 4.2-H Given program data, identify the direct and indirect costs.

ANSWER 4.2-H See your supervisor for the assignment.